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STREET ACCIDENTS—NEW YORK CITY.*

By E. S. Clowes, *Statistician for the National Highways Protective Society.*

This paper deals with Street Accidents in New York. Last fall I took charge of the statistical work of the National Highways Protective Society and I have, in the interval, learned enough about street accidents to realize that the problem of their control is a very complicated one—not to be solved in any quack fashion, but only by the force of an aroused and intelligent public sentiment, expressing itself in definite and comprehensive regulations and laws, administered with common sense and impartially enforced.

The dangers of the streets of New York are becoming a national tradition. Clippings come to the society from nearly all over the country stating the numbers of killed and wounded here and expressing editorially more or less humorous comment regarding the agility of New Yorkers and the perils of life in the metropolis. Captain Bob Evans, "Fighting Bob" of Santiago fame, once is alleged to have said that he felt safer on the bridge of a battleship in action than he did when trying to cross Broadway or Fifth Avenue.

For three years past the National Highways Protective Society has been keeping a record of traffic accidents in New York. These have been classified with respect to the vehicle that inflicted them, whether the victim was less than seventeen years old, and whether or not the injury was fatal. The number of fatal accidents has been derived from the coroners' offices of the respective boroughs and are collected each month. I believe this to be more satisfactory than the Board of Health figures, as the Board of Health gets its figures of violent deaths from the coroners' offices, and while accurate with respect to the nature of the injury the Board of Health is not always particular as to the cause of it. How a variation in the figures occurs is easily seen by a little study of the way the coroners' records are kept. When the office is first notified of a death all that is entered is the victim's name, the place where the body was found, the coroner assigned to the case, and the proximate cause of the injury, with almost invariably, if it is a traffic case the nature of the vehicle inflicting it. These cases are all entered a second time in a journal where such details as age, occupation, etc., are noted with a more complete description of the injury and occasionally the detailed findings of the coroner's jury. Quite frequently, however, in this journal the cause of the injury is not stated, the record merely reading "Fractured skull," "Crushed pelvis" "Rupture of the viscera," etc., without stating that the injury was due to having been run over. The Board of Health records I think have been largely taken from this journal rather than from the day book because the journal gives the victim's age, civil condition, and a more nearly complete account of the anatomical injury, but for the reasons above stated it is necessary in order to get an accurate list to go over both volumes of records. This the National Highways Protective Society has always done, and its figures at the close of the year agree closely with the coroners' reports.

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We classify accidents under Automobiles, which includes all power propelled vehicles not running upon rails; Trolleys, which include all surface electric railways, running upon the highways or streets, and Wagons, which include all animal drawn vehicles. The following classes of accidents are excluded from our record: automobile or motorcycle accidents in which the victim was the driver of the vehicle and where the accident was due solely to his own recklessness, trolley accidents other than collisions in which the victim was an employee in the discharge of his duty, and wagon accidents when the victim was the driver and no one else was apparently to blame. Runaway accidents are counted. Collisions between vehicles are noted and classified by the two vehicles engaged, such as trolley and wagon, automobile and trolley, etc., and the death or injury is blamed upon the stronger class of vehicle in the encounter. In automobile and trolley collisions the blame is put upon the automobiles as it is the more easily controlled and has greater freedom of action. Collisions, however, are responsible for very few deaths, for instance in the years 1910–11–12 out of 473 automobile fatalities, only thirteen were due to collisions. The remainder represented pedestrians run down.

Our figures for injury are derived from newspaper clippings and are undoubtedly much below the mark, although we get clippings from pretty nearly every newspaper printed in English in Greater New York, some of which, such as the *Home News* and the *Greater New York Star* are probably unfamiliar to most of the city's residents. I think we get 90 per cent. of the serious accidents, but many minor ones go unreported, and at times when the papers are full of important news, as they were after the loss of the "Titanic" or during the recent floods in the West, many accidents are unrecorded.

Since the first of December last, I have kept a name record of every accident, either reported in the papers or from the coroners' offices to which, in addition to the usual details, I have added such information as, driver drunk, victim deaf, mute, driver ran away, taxicab, ambulance, doctor's car, owner driving, driver exonerated, or whatever I thought might be of possible interest. Some of these in time will present features of interest.

So much for the way in which the records are kept. I think that for purposes of comparison and study it will best suit our purpose to consider only the fatal accidents. Even they could provide material for a longer article than I feel that I have at present time to prepare, but a briefer study will not be entirely sterile if not of conclusions, at least of interesting leads for further study.

The first thing to notice is that automobile fatalities are progressively increasing, while those due to trolleys and wagons are nearly stationary from year to year. Automobile deaths in 1910 were 112, in 1911, 142, and in 1912, 221; for the first three months of 1913, there were 51 against 39 last year. Trolley deaths in 1910 were 148, in 1911, 109, and in 1912, 135. Wagons showed 201, 172, and 176, respectively, for the three years. This shows the way automobile fatalities are increasing and is interesting also in that last year automobiles, for the first time, caused more deaths than any other class of vehicles. The increase has been largest in the Borough of Manhattan, the most congested borough, least in Richmond, the least congested, the increase over the year 1911 being zero in the latter against about 62 per cent. in the former, and 56 per cent. for the whole city. Brooklyn shows about the average increase, but Queens shows 100 per cent. increase due probably to the fact that several of the speedways to Long Island lie through this borough.

In all classes of street accidents, children furnish much more than their share of numbers. According to the United States Census of 1910, 28.7 per cent. of the inhabitants of this city were under fifteen years of age. It would be a safe guess that the figure for those sixteen or less, which is the National Highways Protective Society's classification of children, would be close to 30 per cent. Proportionately to the population, then, children should furnish 30 per cent. of the traffic fatalities. On the contrary they have furnished during the last three years 42 per cent. of such fatalities. The vehicle that has been relatively most fatal to children is the wagon, as children were the victims in 49 per cent. of the fatal wagon accidents. Automobiles are just at the average, trolleys are relatively safest with 33 per cent. or little above the normal proportion. Perhaps these figures might be explained in the theory that in the tenement district where most of the children live, and where they spend nearly all day on the streets, wagons furnish the principal part of the traffic. Trolleys are relatively safer for children because even the child soon knows he is safe if he will only keep off the tracks, and the motorman is particularly careful if he sees a child running into danger, whereas he thinks the adult is able to look after himself.

We have seen, then, that the killings from automobiles now exceed those from either trolleys or wagons, and that they are rapidly increasing, while those due to the last two causes remain nearly stationary. We have also seen that children furnish an undue proportion to these fatal accidents, and that wagons are relatively the most fatal vehicle for them. With these and subsequent data let us see if we can get any clue toward a reasonable method for preventing these fatalities.

Along any street or highway the four factors that enter into accidents are: congestion of the highway, the speed of the vehicle, the carelessness of the driver, and the negligence of the victim. The latter is what one might call a "human constant" which for purposes of comparison can be disregarded. The carelessness of the driver is in part proportionate upon his fear of punishment, and there remains the other variables of congestion of the street and normal speed of the vehicle. The congestion of the street is due to two factors, the density of the population and the mileage of the streets per unit area. It might be reduced to one factor, the density per street mile, but that would overlook the diminishing effect upon traffic accidents of vacant spaces not traversed by streets where children may play in safety. The five boroughs of this city offer excellent grounds for comparison: Manhattan is densely populated, Brooklyn and Bronx are of the density of the average city, and Richmond entirely and Queens outside of Long Island City are suburban or even rural in their character.

I have, therefore, worked out a comparison for these five boroughs. I have taken for purposes of comparison the automobile figures for the last year as the rate of increase has been so great that the figures of two years ago would have little present application. Because of improvements in the trolley system of Brooklyn about two years ago, which caused that year a marked drop in the death rate, I have taken the trolley figures for 1911–12. For wagons I have taken all three years. Figuring on this basis the fatal accident rate per million per year shows that Manhattan has the highest rate for wagons and Queens the highest for both automobiles and trolley, although the rate for trolleys for Queens, Bronx and Manhattan are close together, being 30, 29, and 27 respectively. Manhattan stands second on the automobile list, the Brooklyn last and next to last in trolley accidents. In other words, the fatal wagon accident rate per million is highest in the most congested borough while for automobile and trolleys it, although high there, is exceeded by the next to the least congested borough, which happens to be one which in proportion to its population endures a very large automobile traffic, and this auto traffic as well as the trolley traffic, is largely along highways where high speed can be maintained.

There is another interesting basis of comparison. If we divide the street mileage in any borough by the number of fatal accidents, we get a figure representing the number of miles of road for every such accident. Reduced to a per annum basis, these show that for any given stretch of road Manhattan excells in all classes of accidents, followed by the other boroughs in proportion to the density of their population. In order to see how closely this proportion held I multiplied the figure representing the miles of street per accident by the population per acre for each borough, and although the latter varies as much as 200 and 38 for Manhattan and Brooklyn, and the accident rate varied from 3.6 to 20 I found that the six products derived by multiplying these two factors for these two boroughs for each class of traffic, only varied from 608 to 880 showing a pretty well defined relation between accidents and population density mileage of streets. In making these comparisons of course the trolley mileage was used for the trolley figures, not the general street mileage. For the other boroughs the relation did not hold so well owing to the fact that the street mileage there is small with relation to the area.

Summed up, all these figures seem to show in general that wagon accidents are a function of population density and that automobile accidents are a function of population density and the speed at which the vehicle is likely to be run. The protective effect of a low density of population is seen to be overcome by the presence of sketches of road over which many automobiles pass at very high speed. Two remedies are needed. First relieve congestion. We have already seen that nearly half the victims are children, particularly those killed by slow moving wagons. If sufficient playgrounds could be established to take the children off the streets it would save more than half of them, as fully that many are killed while at play. All trolley cars should be equipped with a powerful air or power brake. Nearly all are in Manhattan and Brooklyn, where notwithstanding congestion the rates are lower than in some of the outlying boroughs. Efficient fenders should be provided.

With respect to automobile fatalities which now exceed those due to any other class of vehicles, the taking of children off the streets would help some, and speed regulations more, but there would be little need of the latter, if every driver realized that a fatal or serious accident would mean for him either the loss of his means of livlihood or the deprivation of the use of his property.

Finally, the figures for a few other large cities as compared with New York might be of interest.

In 1912 there were 532 fatal traffic accidents in New York.

In 1911 there were 410 fatal traffic accidents in London.

In 1911 there were 236 fatal traffic accidents in Paris.

In 1911 there were 129 fatal traffic accidents in Berlin.

This gives a fatality rate per million for these cities for these years as follows:

New York	106	Paris	81
London	56	Berlin	64

This confirms the general impression that Paris is the most dangerous and London the safest of the European cities, but New York exceeds even Paris and has very nearly double the rate of London where traffic regulations are strictly enforced.

MILES OF STREET PER ACCIDENT.

	Autos.	Trolley.	Wagon.
Manhattan	3.6	4.2	4.4
Brooklyn	20.	16.	18.
Bronx	25.	13.	33.
Queens	46.	20.	224.
Richmond	105.	62.	100.

POPULATION PER ACRE.

Manhattan	200.
Brooklyn	38.
Bronx	20.
Queens	4.8
Richmond	2.5

POPULATION PER ACRE TIMES MILES OF STREET PER ACCIDENT.

	Autos.	Trolley.	Wagon.
Manhattan	720	840	880
Brooklyn	760	608	684
Bronx	500	360	660
Queens	221	96	1075
Richmond	262	155	250

FATAL ACCIDENT RATE PER MILLION PER YEAR.

	Autos.	Trolley.	Wagon.
Manhattan	52.5	27	43
Brooklyn	30.	19	33
Bronx	36.	29	27
Queens	65.	30	14
Richmond	33.	11	33